

A PRELIMINARY LIST OF THE TRICHOPTERA OF BRITISH COLUMBIA

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This list records 142 species of Trichoptera from the Province of British Columbia, but the caddisfly fauna of British Columbia probably contains a good 100 species more. Records to date are chiefly from the southwestern and south-central parts of the Province, and in the main, from lower elevations. Large numbers of species known from neighboring mountains in Washington, Montana, and Alberta, as well as many other species, will undoubtedly be taken in British Columbia with future collecting.

A faunal analysis of the British Columbia caddisflies brings out several interesting points. In southern British Columbia there occurs a curious mixture of two large and distinctive elements, the transcontinental northern fauna and the western montane fauna. In the West the former extends little south of the Canadian boundary. Also emphasized by many species is the distinctive nature of the Cascade fauna in comparison with that of the eastern ranges.

Quite a number of species belong to closely-knit complexes composed of geographically isolated units. Included in this list are *Limnephilus sylviae*, and *Glossosoma wenatchee*. More information on the distribution of these and other species will be of tremendous help in unraveling the story of species genesis on the North American continent.

The largest single set of records comprises the collections made by Dr. W. E. Ricker at Cultus Lake. To Dr. Ricker and many others who have made material available we wish to express our sincere gratitude.

FAMILY RHYACOPHILIDAE

Includes only rapid stream or cascade inhabiting species.

Genus *Rhyacophila* Pictet

- R. angelita** Banks. July 3 to Nov. 24; Courtenay, Cowichan L. (Cowichan R.), Cultus L., W. of Hope (Silver Cr.). Western, widespread through the montane region.
- R. bifila** Banks. July 9 to Aug. 10; Cultus L., W. of Hope (Silver Cr.), W. Vancouver (Capilano R.), Vernon, Walhachin. Widespread through the western montane region.
- R. coloradensis** Banks. Aug. 10 to Oct. 11; Cultus L., W. of Hope (Jones Cr.), W. of Hope (Silver Cr.). Widespread through the western montane region.
- R. grandis** Banks. June 14 to July 15; Bon Accord, Cultus L., Vancouver (stream on Marine Drive), Vernon. Common in the Cascade and coastal regions from Ore. to B.C.

R. inculta new species.

Male.—Length 12 mm. Head and body various shades of dark brown, antennae and legs paler; wings dark brown with a purplish tinge.

Male genitalia as in fig. 1. Ninth segment nearly cylindrical, with the dorsal area wider than the ventral and bearing a pointed mesal projection extending above and over the base of the tenth tergite. Tenth tergite divided into a pair of thick, blade-like lobes held vertically, without other structures. Claspers with basal segment fairly long, wide at base and narrowed at apex, the ventral margin sinuate; apical segment of moderate size and definitely foot-shaped, the heel rounded and the toe robust. Aedeagus consisting of a mesal tube on each side of which is situated a membranous tubular arm ending in a pad bearing minute setae; these arms are extensile and when stretched out are longer than the claspers.

Female.—Slightly larger than male but similar to it in color and general structure. Eighth segment moderately long and wide, tapering from base to apex, this apical margin somewhat

irregular and without conspicuous features. Spermatheca fairly long and wide, almost entirely membranous but with a few semi-sclerotized areas in its wall.

Holotype.—Male; Cultus Lake, July 23, 1936, H. H. Ross. *INHS. Allotype*.—Female; Cultus Lake, May 18, 1933, W. E. Ricker. *INHS. Paratypes*.—B.C.: Cultus Lake, same data as holotype, 2♂♂; various dates, W. E. Ricker, 25♂♂; 20♀♀; Vancouver, tributary of Lynn Creek, July 20, 1936. H. H. Ross, 1♂, 1♀. OREGON: Big Creek, Clatsop Co., Aug. 31, 1946, S. G. Jewett, Jr., 1♂; Clatskanie, May 9, 1936, K. Gray and J. Schuh, 9♂♂, 7♀♀. Deposited with the holotype and in the collections of the University of British Columbia, Canadian National Collection, and Oregon State College.

This is the species referred to by Ross (1938¹) and others as *brunnea* Banks. The holotype of *brunnea* is a female from New Mexico and according to our present knowledge of the distribution of this group it is highly likely that it applies to *acropedes* Banks, which might, therefore, ultimately prove to be a synonym of *brunnea*. Rather than make this change, it seems better to await material from the type locality before making a decision as to the exact placement of *brunnea*. The Cascade species which has been recorded under the name *brunnea* is the species here described as *inculta*. It is a sister species of *vao* Milne and *acropedes*, differing from the former in the long projection of the ninth tergite, and from the latter by the more robust, deeper claspers. There is still some uncertainty as to the ultimate distinction between the Cascade species *inculta* and the more eastern *acropedes*. It is noteworthy, however, that *inculta* and *vao* occupy the same range, and are readily separated. Whatever the problem it seems certain that its analysis will be furthered by the retention of the species concept of *inculta*.

R. norcuta Ross. March 13 to 27; Cultus L. Reported from western Calif., Ore., Wash., and B.C.

R. oreta Ross. March 27 to Oct. 12; Cultus L. Previously reported from Utah, Calif. and Ore.

R. perda Ross. July 26; Cultus L. Previously known from western Ore. and Wash.

***R. perplana* new species**

Male.—Length 9.5 mm. Head and body light brown, antennae and legs lighter, the legs nearly straw-color; wings light brown with purplish tinge.

Male genitalia as in fig. 2, in general shape and proportions similar to *angelita* Banks. Tenth tergite forming a curious, angled structure which, when cleared and extended, appears as in fig. 2a. The dorsal portion is short and blunt, with a v-shaped apical incision of moderate depth; ventral arm flat. Beneath it articulate the two trianguloid sclerites which are connected with the dorsal tendon of the aedeagus. Claspers with basal segment fairly long and of uniform width, apical segment with a very rounded heel and blunt toe, the toe not extended as a finger-like process. Aedeagus almost exactly as in *angelita*, with the apex of the lateral flap almost lanceolate (it is obovate in *vuzana* Milne).

Holotype.—Male; Cultus L. South Cr., B.C., Nov. 1, 1936, W. E. Ricker, *INHS*.

This species belongs to the *angelita-vuzana* complex. From the former it differs in the short dorsal lobe of the tenth tergite which is very similar to that of *vuzana*; from *vuzana* it differs in the short apical segment of the clasper, the elongate apical lobe of the aedeagal arms, and the flat ventral arm of the tenth tergite, all of which resemble *angelita*. Since all three species occur at Cultus Lake, it was suspected at first that the specimen of *perplana* might be a hybrid, but examination of the material showed a consistency of characters which suggested that this was a very unlikely possibility. It seems more reasonable, with the information at hand, to consider that the progenitor of the complex was divided to form first the two species, *angelita* and a species very

similar to *perplana*, and that, subsequently, the latter species was again divided to form *perplana*, which remained relatively unchanged, and *vuzana*, which developed additional differences in claspers and aedeagus.

R. tucula Ross. Aug. 25 to Sept 14; Chilliwack L., Cultus L. (along Chilliwack R.), Silver Creek. Recorded from B.C., Ore., Wash., and Wyo.

R. unimaculata Denning. April 16; Robson. Known only from this locality.

R. vaccua Milne. July 19 to Sept 14; Cultus L., Fitzgerald, Keremeos (Shingle Cr. Rd.), N. Vancouver. Widespread through the northern part of the western montane region.

R. vaefes Milne. Aug. 25; Cultus L. Known from B.C. and Ore.

R. vagnita Milne. Aug. 24; Cultus L. Known only from southern B.C.

R. valuma Milne. July 23 to Aug. 25; Cultus L. Known from the Cascade and coastal region.

R. vao Milne. May 20 to Aug. 9; Cultus L., Manning Park (Upper Skagit R.). Known from the Cascade region from Wash. to Alaska.

R. vepulsa Milne. May 22 to Aug. 9; Cultus L., Manning Park (Similkameen R., Allison Pass, 4500 ft.), Stave Falls (Steelhead Cr.). Known from the western ranges from Calif. to B.C.

R. verrula Milne. Aug 12 to 28; Cultus L. Widespread through the western montane region.

R. visor Milne. Aug. 12; Cultus L. Known only from a few localities in the Cascades from Ore. to B.C.

R. vobara Milne. Aug. 12; Cultus L., Revelstoke Mt. Known only from B.C.

R. vocala Milne. July 14 to Aug 16; Cultus L., Fernie, E. of Hope (17 mi. Cr.). Known from the Cascades from Ore. to B.C.

R. vujuna Milne. Aug. 9; E. of Hope (17 mi. Cr.). Known from B.C. and Ore.

R. vuzana Milne. Sept. 9; Cultus L. Known from B.C., Ore. and Calif.

Genus *Anagapetus* Ross

A. bernea Ross. Aug. 9; E. of Hope (17 mi. Cr.). Known from the Cascades in B.C. and Wash.

Genus *Glossosoma* Curtis

G. penitum Banks. June 10 to Aug. 10; Burnaby, E. of Chilliwack (Cheam View), Cowichan L., Cultus L., Peachland, Stave Falls (Steelhead Cr.), N. Vancouver. Occurs chiefly in the Cascades from Ore. to B.C.

G. pyroxum Ross. July 6; Port Coquitlam (Coquitlam R.). Known from B.C. and Ore.

G. velona Ross. April 4 to Nov. 14; Cultus L., N. of Ft. St. James (Middle R., 14 mi. from mouth). Widespread through the western montane region.

G. wenatchee new species.

Male.—Length 9 mm. Color of head and body various shades of light brown, the legs yellow. Mesal process of sixth sternite blunt and round. Genitalia as in fig. 3. Hood large. Lateral plates of tenth tergite sinuate. Cercus elongate, constricted at base and forming a long curve ending in a long, slender, whiplike apical portion surmounted by a thin style; before this style the cercus bears only a few minute setae. Clasper with base greatly constricted, its dorsal margin slightly concave, its ventral margin moderately convex, the apex with a very short, blunt point; the entire clasper is flat and its ventral edge is not angled mesad. Aedeagus tapering to a narrowed apical portion, occasionally with a slight shoulder before the apical constriction but usually more like fig. 4.

Holotype.—Male; Cashmere, Wash., Wenatchee River, June 23, 1940, H. H. and J. A. Ross, INHS. *Paratypes*: WASHINGTON: same data as holotype, 3♂♂; Chiwaukum, Wenatchee River, June 24, 1940, H. H. and J. A. Ross, 1♂. OREGON: Maupin, Deschutes River, June 5, 1947, S. G. Jewett, Jr., 2♂♂. B.C.: Keremeos, Shingle Creek Road, Sept. 14, 1934, A. N. Gartrell, 3♂♂. Paratypes in the collection of the Illinois Natural History Survey, University of British Columbia, and the Canadian National Collection.

This species belongs in the *alascense* complex and is most closely related to *califica* Denning, from which it differs in the fairly broad apex of the clasper, the narrower aedeagus, and the rather low apex of the lateral lobes of the tenth tergite.

FAMILY PHILOPOTAMIDAE

As with the Rhyacophilidae, members of this family occur only in rapid streams or cold brooks.

Genus *Dolophilodes* Ulmer

D. aequalis (Banks). June 26 to Aug. 4; Hope, Keremeos, Princeton. Widespread through the western montane region.

D. dorcus (Ross). Aug. 9-10; Bowser (Cook Cr.), E. of Chilliwack (Cheam View), Cultus L., E. of Hope (11 mi. Cr.). Known only from the western ranges of B.C. to Ore.

D. pallidipes (Banks). July 26; Hedley (Mt. Apex, 6000 ft. el.). Known from B.C., Wash. and Ore.

Genus *Wormaldia* McLachlan

W. anillus (Ross). Jan. 15 to Aug. 10; Agassiz, E. of Chilliwack (Cheam View), Cowichan L., Cultus L., Stave Falls (Steelhead Cr.), N. Vancouver. Known from B.C.

W. gabriella (Banks). June 30 to July 23; Cultus L., Oliver, Sardis, Vancouver. Widespread through the western montane region.

FAMILY PSYCHOMYIIDAE

Most of the British Columbia species in this family are taken along rivers or lakes.

Genus *Neureclipsis* McLachlan

N. bimaculatus (Linnaeus). July 30; N. of Ft. St. James (Middle R. of Takla L.). Holarctic; widespread in the north, eastward to Illinois.

Genus *Polycentropus* Curtis

P. aureolus Banks. Aug. 6; Quesnel. Known previously from the north-central and northeastern parts of the continent.

P. cinereus (Hagen). July 20 to Aug. 2; Cultus L., Keremeos, Quesnel, Seymour, Vancouver, Vernon. Widespread over most of North America.

P. flavus Banks. June 23; Canim Lake. Transcontinental and northern.

P. interruptus (Banks). Aug. 23; Soda Creek. Transcontinental and northern; previously reported from Colo. to the Atlantic.

P. remotus Banks. July 23 to Aug. 23. Peachland, Transcontinental and northern.

P. variegatus Banks. June 14 to Aug.; Burnaby (Stoney Cr.), Cowichan L., Seton L., Vancouver, W. Vancouver (trib. of Capilano R.). Confined to the western montane region.

Genus *Nyctiophylax* Brauer

N. vestitus (Hagen). June 27 to Aug. 19; Bowen Island, Cowichan L., Cultus L., Keremeos, Peachland, Vernon, Victoria. Widespread over most of North America.

FAMILY HYDROPSYCHIDAE

The first two genera inhabit cascades, but the others are primarily river-loving species.

Genus *Arctopsyche* McLachlan

A. grandis (Banks). May 26 to Aug. 16; Cranbrook, Kaslo, Keremeos, Lillooet, Merritt, Seton L., Vancouver. Widespread through the western montane region.

Genus *Parapsyche* Betten

P. almota Ross. May 12; Cultus L. Known from B.C. and Ore.

P. elsis Milne. July 8 to Aug. 9; Cultus L., Jesmond, Lytton (Blue Lake), Manning Park (Similkameen R., Allison Pass, 4500 ft.), Revelstoke. Known from B.C. to Ore.

Genus *Hydropsyche* Pictet

H. ambilis Ross. June 11; Mons (Alta L.). Known from B.C. and Ore.

H. californica Banks. Aug.; Cowichan L. Widespread through the western montane region and recorded from Minn.

H. centra Ross. May 27 to June 20; Lillooet (Seton Lake). Known from B.C. and Ore.

H. guttata Pictet.

H. separata Banks, 1936, Psyche, 46:126. *New synonymy*. July 11 to 30; Chilliwack, Kamloops, Rosedale. Holarctic; in North America extending from B.C. to N.Y., northern. Material from North America has been compared with specimens from Switzerland and Russia and found virtually identical with them.

H. occidentalis Banks. June 9 to Aug. 13; Canim L., Cultus L., Lillooet (Seton L.), Nelson, Oliver, Sardis. Widespread through the western montane region.

H. oslari Banks. June 9 to Aug. 27; Chilliwack, Jesmond, Lower Post, Nicola, Oliver, Quesnel, Soda Creek. Widespread through the western montane region.

H. riola Denning. June 23; Canim L. Transcontinental, northern.

Genus *Cheumatopsyche* Wallengren

C. analis (Banks). July 4 to Sept. 11; Agassiz, Nicola, Vancouver (Beaver Cr.). Widespread over most of North America.

C. campyla Ross. June 19 to July 9; Cowichan L., Seton L., Walhachin. Widespread over most of North America.

C. gracilis (Banks). June 28 to Aug. 16. Lower Post, 100 Mile House. Transcontinental, northern.

FAMILY HYDROPTILIDAE

This family comprises the micro-caddisflies, most of which are less than 3mm. long, although some reach a length of 6 mm. They occur in a variety of habitats.

Genus *Agraylea* Curtis

A. multipunctata Curtis. July 24 to Aug.; Chilliwack, Cowichan L. Holarctic; widespread across northern North America.

Genus *Ithytrichia* Eaton

I. clavata Morton. July 23; Cultus L., Sardis. Transcontinental, widespread.

Genus *Oxyethira* Eaton

O. serrata Ross. July 31 to Aug.; Cowichan L., N. of Ft. St. James (Middle R. of Takla L.). Transcontinental; previous records from east of the Rockies.

O. sodalis new species.

Male.—Length 2 mm. Color speckled gray, general structure typical for genus. Male genitalia as in Fig. 5. Lateral portion of posterior margin of eighth segment deeply incised just below mid-line; anterior margin of

segment with a wide, fairly deep invagination. From beneath the dorsal margin of the incision on the apical margin there arises a curious process which is very large at the base and narrows rapidly to a curved, long apical portion; this enlarges slightly at apex and gives rise to a single long seta which curves back over the top of the ninth segment. Ninth segment with dorsal portion distinct, its posterior margin crenulate; ventral portion ending in a fairly wide apical plate tapering to a sharp point at apex; segment only moderately invaginated within the eighth. The lateral portion of the ninth bears, on each side, a pair of finger-like processes which diverge at their tips. These two processes are fused at the base and may represent the clasper, which is, otherwise, unaccounted for. Subgenital plate heavy and hook shaped. Aedeagus short, with a spiral process arising near its base and with its apex bulbous; the apex of the spiral process can not be distinguished with certainty in the specimen at hand.

Holotype.—Male; Soda Creek, B.C., Aug. 23, 1950, at light, G. J. Spencer, INHS.

This species is readily distinguished from all others in the genus by the curious lateral appendage of the eighth segment. It does not appear to be closely related to any known species although in shape of aedeagus and general shape of the capsule, it approaches most closely *forcipata* Mosely and *grisea* Betten.

Genus *Orthotrichia* Eaton

O. cristata Morton. July 24; Chilliwack. Transcontinental.

Genus *Hydroptila* Dalman

H. arctia Ross. Aug.; Cowichan L. Widespread through the western montane region.

H. consimilis Morton. Aug. 23 to 27; Soda Creek. Transcontinental, northern.

H. rono Ross. July 6; Port Coquitlam (Coquitlam R.). Widespread through the western montane region.

H. xera Ross. July 6; Port Coquitlam, Coquitlam R. Widespread through the western montane region.

FAMILY PHRYGANEIDAE

With this family begin the typical case-making groups, which contain all the species from here to the end of

this list. The Phryganeidae are predominantly marsh inhabitants.

Genus *Agrypnia* Curtis

A. colorata (Hagen). June 13 to 17; Kamloops. Northern, widespread.

A. improba (Hagen). June 11 to July 15; Nicola, Quesnel. Western and north-eastern.

Genus *Banksiola* Martynov

B. selina Betten. June 28 to Aug. 18; Kamloops, 100 Mile House. Transcontinental, northern.

Genus *Phryganea* Linnaeus

P. cinerea Walker. June 15 to Aug. 5; Canim L., N. of Ft. St. James (Middle R. at Takla L.), Nicola (Dry Farm), Salmon Arm. Transcontinental, northern.

FAMILY LIMNEPHILIDAE

Genus *Dicosmoecus* Martynov

All three members of this genus are widespread through the western montane region.

D. atripes (Hagen). July 30 to Aug. 31; Brem River, Hat Creek, Indian River, Merritt, Vancouver.

D. gilvipes (Hagen). July to October 15; Arrowhead L., Cultus L., Merritt, Penticton, Quesnel Lake, Vancouver, Wellington.

D. occidentis Banks. Aug. 11 to Oct. 28; Cultus L., Fernie, Quesnel, Wellington.

Genus *Imania* Martynov

I. bifosa Ross. July 20; Glacier. Known from B.C. and Alta.

I. tripunctata (Banks). Wellington. Widespread through the western montane region.

Genus *Cryptochia* Ross

C. pilosa (Banks). Aug. 10; E. of Chilliwack (Cheam View). Known only from the Cascade region in B.C., Wash. and Ore.

Genus *Glyphotaelius* Stephens

G. hostilis Hagen. July 12; Cariboo. Transcontinental, northern.

Genus *Hesperophylax* Banks

Both B. C. species are widespread western forms.

H. incisus Banks. June 6 to Aug. 27; Canim L., Fernie, Hat Creek, Lillooet, Merritt (Midday Val.), Nicola, Penticton, Pavilion L., Upper Peace R. Dist. (between Nelson and Finlay Div., Akie Pass), Wellington.

H. occidentalis (Banks). Aug. 19-20; Gold R.

Genus *Grammataulius* Kolenati

G. betteni Griffin. Sept. 12-29; Agassiz; Eburne; Saanich Dist. Known chiefly from the Cascades, from B.C. to Ore.

G. interrogationis (Zeff.). July 2 to Aug. 16; Lower Post, Rolla, Trinity Valley. Transcontinental, northern.

Genus *Philarctus* Martynov

P. quaeris (Milne). July 9 to Aug. 19; Kamloops, Quesnel L. Transcontinental, northern.

Genus *Lenarchus* Martynov

L. fautini Denning. July 17; Barkerville. Known from B.C., N.W.T., and Wyo.

L. rho Milne. June 6 to Sept 28; Agassiz, Bon Accord, Gulf of Georgia, Quesnel, Victoria, Wellington. Known from B.C. and Wash.

L. vastus Hagen. June 10 to Sept. 1; Cowichan L., Departure Bay, Vancouver. Known from Wash. to Alaska.

Genus *Limnephilus* Leach

L. batchewana Denning. July 2-17; Barkerville. Transcontinental, from Western Ont. to B.C.

L. bimaculatus Walker. July 7 to Aug. 14; Kamloops, Kamloops (Lac du Bois), Nicola. Transcontinental, northern.

L. cerus new species

Male.—Length 13 mm. Color of body and appendages various shades of reddish brown, the eyes and leg spines black, the wings finely irrorate with darker brown. General structure typical for genus. Head with one long macrochaeta mesad of the posterior margin of each eye. Front legs with basitarsus subequal in length to succeeding segment. Eighth segment simple, without dorso-apical projection or patch of setae. Genitalia as in fig. 6. Ninth segment moderately thick, reduced to a narrow bridge dorsally. Clasper with proecting portion longer than wide, its apex distinctly truncate, the corners rounded. Cercus of only moderate size, ovate, its mesal face very concave and without sclerotized points. Lobes of tenth tergite with sclerotized portion slender, elongate, and curved latero-dorsad at apex. Aedeagus unusually long and slender, the lateral arms with a long slender stalk and a simple, enlarged concave apex bearing a cluster of spines and setae.

Holotype.—Male; Cultus L., B.C. (Sumas Slough), May 11, 1933, W. E. Ricker, INHS. *Paratype*. — Duncan, B.C., September 13, 1919, W. Downes, 1♂. (Canadian National Collection).

This species is most closely related to *lunonus* Ross, differing from it in the shorter cercus which has a convex posterior margin.

L. cinnamoneus (Schmid). Aug. 17; Quesnel, Wellington. Known only from B.C. and Alaska.

L. externus Hagen. June to Sept. 6; Cowichan L. (Cowichan R.), Kamloops, Kamloops (Lac du Bois), Lower Post, Nicola, Summerland. Holarctic, northern.

L. fagus Ross. Sept. 21; Cultus L. Cascades, from Ore. to B.C.

L. flavastellus Banks. Sept. 23; Wellington. Cascades, B.C. to Alaska.

L. harrimani Banks. July 15-20. Bon Accord, Vancouver (Stanley Park, Stream No. 1), N. Vancouver (Grouse Mt., 4000 ft.), W. Vancouver (Capilano R.). Western, from Ore. to Alaska.

L. hyalinus Hagen. June 28 to Sept. 28; Nicola, 100 Mile House, Quesnel, Shuswap, N. of Ft. St. James (Tachla R. at Stuart L.), Vernon. Transcontinental, northern.

L. indivisus Walker. July to Sept. 25; Chilcotin, Mission, Midday Val., Nicola, Soda Creek. Transcontinental, northern.

L. insularis Schmid. July 17 to Sept 28; Barkerville, Wellington. Known only from B.C.

L. lopho Ross. Aug.; Barkerville, Hedley, Hope Mts. (6000 ft.), Revelstoke (6000 ft.). Known from B.C. and Ore.

L. nogus Ross. Feb. to Oct. 15; Arvas, Chilliwack, Cultus L., Departure Bay, Eburne, Haney, Point Grey, Vancouver, New West'r. Cascades, from Ore. to B.C.

L. occidentalis Banks. May 4 to Sept. 13; Duncan, Kamloops, Vancouver Island. Widespread in the western montane region.

L. pacificus Banks. Feb. 19 to Oct. 31; Cowichan L., Departure Bay, Hatzic Prairie, Wellington. Chiefly in the Cascades, from Ore. to B.C.

L. secludens Banks. June 28 to Aug. 27; Aspen Grove, Chilcotin, Fernie, Jesmond, Kamloops, Lower Post, Merritt (Midday Val.), Nicola, 100 Mile House, Penticton, Rolla, Soda Creek. Transcontinental, northern.

L. sericeus (Say). July 17 to Oct. 14; Australian, Barkerville, Chilcotin, Hat Creek, Kamloops, Quesnel, Shuswap Narrows, Soda Creek. Transcontinental, northern.

L. sylviae Denning. May 31; Vancouver (Seymour Mt., 4700 ft.). Known from B.C. and Ore.

L. tarsalis (Banks). July 18 to Aug. 2; Kamloops, Quesnel. Transcontinental, northern.

Genus *Chyranda* Ross

C. centralis (Banks). Aug. 9-26; Fernie, Tahumming. Widespread through the western montane region.

Genus *Clostoecca* Banks

C. disjuncta (Banks). May 3 to June; Bon Accord, Vancouver. Widespread through the western montane region.

Genus *Halesochila* Banks

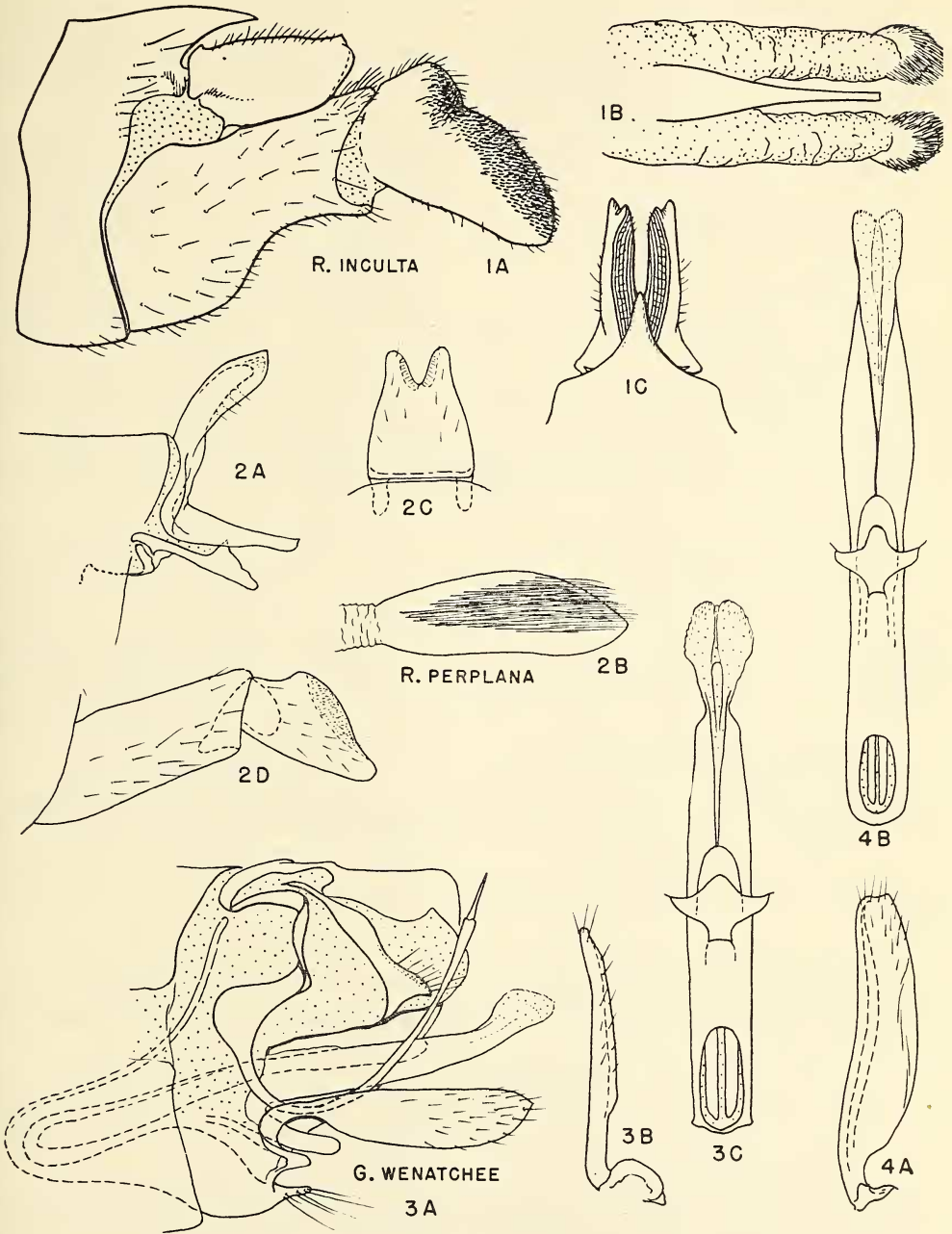
H. taylori Banks. Oct. 12; Point Grey, U.B.C., Wellington. Known only from B.C.

Genus *Hydatophylax* Wallengren

H. hespera Banks. July 3 to Aug. 1; Nanaimo (Departure Bay), N. Vancouver (Mosquito Cr.). Known from B.C., Wash., and Calif.

Genus *Glyphopsyche* Banks

G. irrorata (Fabricius). Wellington. Transcontinental, northern.



Figs. 1-4. Genitalia of caddisflies. 1, *Rhyacophila inculta*: A, lateral aspect; B, aedeagus, dorsal aspect; C, tenth tergite, dorsal aspect. 2, *Rhyacophila perplana*: A, tenth tergite, lateral aspect; B, apex of lateral arm of aedeagus, lateral aspect; C, tenth tergite, dorsal aspect; D, clasper. 3, *Glossosoma wenatchee*: A, genitalia, lateral aspect; B, clasper, ventral aspect; C, Aedeagus, ventral aspect. 4, *Glossosoma alascense*: A, clasper, ventral aspect; B, aedeagus, ventral aspect.

Genus *Psychoglypha* Ross

- P. bella** (Banks). Sept. 3; Nanaimo. Known only from B.C.
P. subborealis (Banks). July to Nov. 23; Langley Park, Merritt, Vancouver. Transcontinental and western montane.
P. ulla (Milne). July to Nov. 23; Cultus L., Jesmond, Wellington. Known only from B.C.

Genus *Drusinus* Betten

- D. frontalis** Banks. Terrace (Thornhill Mt.). Known from the Cascades, from B.C. to Ore.

Genus *Ecclisomyia* Banks

All three B. C. species are western mountain forms.

- E. conspersa** Banks. June 4 to Aug. 9; Cultus L., Glacier, E. of Hope (17 Mile Cr.), Keremeos, Nanaimo.
E. maculosa Banks. June 11; Fernie.
E. scylla Milne. June 8 to Aug. 12; Blue Lake, Cultus L., Hope Mts., Mt. Apex, Summerland.

Genus *Neophylax* McLachlan

- N. rickeri** Milne. Oct. 12 to Nov. 7; Cultus L. Known only from B.C.

Genus *Oligophlebodes* Ulmer

Both species listed here are entirely western in distribution.

- O. ruthae** Ross. Aug. 2; Barkerville.
O. sierra Ross. Aug. 9; E. of Hope (17 Mile Cr.).

Genus *Homophylax* Banks

- H. andax** Ross. June; Pitt Meadows. Known from B.C. and Ore.
H. crotchi Banks. July; Victoria. Known only from B.C.

FAMILY CALAMOCERATIDAE

This is primarily a subtropical group, with few representatives in northern areas.

Genus *Heteroplectron* McLachlan

- H. californicum** McLachlan. May and June; Cultus L., Duncan. Western, from Calif. to B.C.

FAMILY MOLANNIDAE

This small family of case-makers is entirely northern in distribution. The larvae live almost entirely on sandy patches of lake bottom.

Genus *Molanna* Curtis

- M. flavicornis** Banks. June 10 to Aug. 20; Canim L., Jesmond, Kamloops, 100 Mile House, Quesnel, N. of Ft. St. James (Tachla R. at Stuart L.). Transcontinental, northern.

FAMILY LEPTOCERIDAE

This widespread family includes both stream species and lake species.

Genus *Athripsodes* Billberg

- A. cancellatus** (Betten). June 23 to Aug. 17; Canim L., Cultus L., Lower Post, 100 Mile House, Seton L., Summerland. Widely distributed over central and northern North America.

- A. cophus** Ross. June 25; Kaslo. Widely distributed in the western montane region.
A. resurgens (Walker). July 23; Cultus L., N. of Ft. St. James (Middle R. at Takla L.). Transcontinental, northern.

Genus *Leptocella* Banks

- L. albida** (Walker). June 14-16; Quesnel, Summerland. Widely distributed over central and northern North America.

Genus *Mystacides* Berthold

- M. alafimbriata** Hill-Griffin. May 30 to Oct. 16; Agassiz, Cameron L., Canim L., Chilliwack, Cowichan L., Cultus L., Emerald L., Emerald L. (Yoho Pk.), Harrison L., Keremeos, Mons (Alta L.), Nelson, Nicola, Oliver, Penticton (Okanagan L.), Pitt L., N. of Ft. St. James (Stuart L., Tachla R.), Saanich Dist., Sardis, Summerland, Vernon. A common lake species throughout the western montane region.

- M. sepulchralis** (Walker). June 14 to Aug. 20; Hat Creek, Quesnel. Transcontinental, widespread.

Genus *Oecetis* McLachlan

- O. avara** (Banks). June 27 to July 25; Cultus L., Lac La Hache, Okanagan L., Sardis. Widespread over all North America.

- O. immobilis** (Hagen). July 2; Okanagan L., Vernon. Transcontinental, northern.

- O. inconspicua** (Walker). June 23 to Aug. 1; Canim L., Cultus L., Jesmond, 100 Mile House, Salmon Arm, Sardis, Seton L., Squilax, Summerland, Vernon. Extremely widespread over North America.

Genus *Triaenodes* McLachlan

- T. baris** Ross. June 28; 100 Mile House. Known from B.C. and Ill.

- T. grisea** Banks. June 13 to Aug. 30; Kamloops. Transcontinental and northern.

- T. tarda** Milne. June 23 to Aug. 27; Cultus L., Minnie L., Nicola L., 100 Mile House. Transcontinental and northern.

FAMILY BRACHYCENTRIDAE

Larvae of this family frequently build a square case of very regular proportions.

Genus *Brachycentrus* Curtis

- B. occidentalis** Banks. April 26 to May 14; Bon Accord, Nicola. Oliver, Quesnel. Widespread through the western montane region.

Genus *Micrasema* McLachlan

- M. bactro** Ross. July 6; Stave Falls (Steelhead Cr.). Widespread through the western montane region.

FAMILY LEPIDOSTOMATIDAE

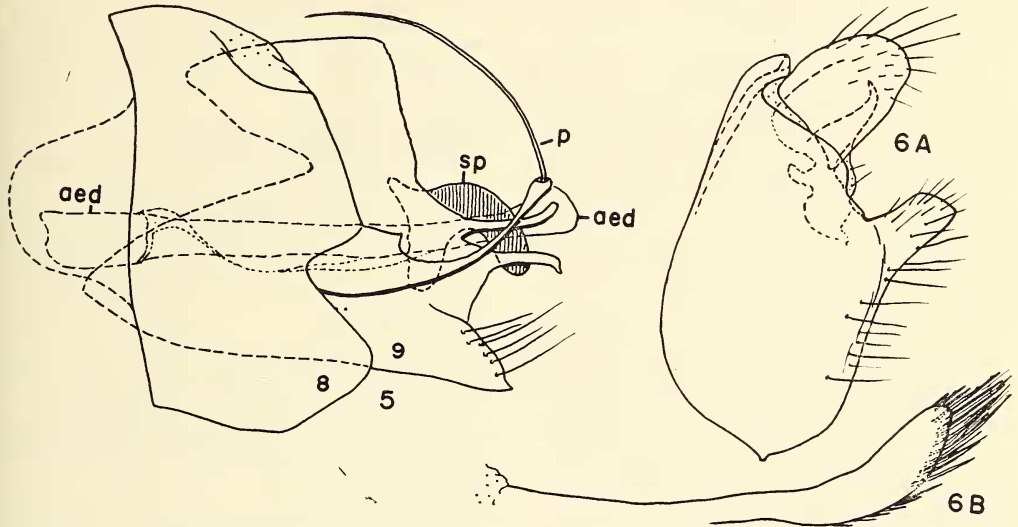
Members of this family build either log-cabin cases or slender, cylindrical ones.

Genus *Lepidostoma* Rambur

- L. cascadenis** (Milne). May 28 to July 15; Cultus L., N. Vancouver (Mosquito Cr.), W. Vancouver (Capilano R.), N. of Whonock (Whonock Cr.). Widespread through the western montane region.

- L. hoodi** Ross. June 10; Nanaimo (Departure Bay). Known from B.C. and Ore.
- L. jewetti** Ross. Sept. 25; Wellington. Known from B.C., Ore. and Calif.
- L. pluvialis** (Milne). June 28; 100 Mile House. Widespread through eastern ranges of the western montane region.
- L. rayneri** Ross. July 16-18; Cultus L., Lillooet, Rosedale (Fraser R.), N. Vancouver. Apparently restricted to the Sierra Ne-

- vada and Cascade range from Calif. to B.C.
- L. roafi** (Milne). Vancouver, Vernon, Transcontinental, northern.
- L. strophis** Ross. June 5 to Oct. 16; Cultus Lake, N. of Ft. St. James (Middle R. at Takla L.), Vernon. Transcontinental, northern.
- L. unicolor** (Banks). July 15 to Sept. 13; Duncan, Vancouver (along Stream I). Transcontinental, northern.



Figs. 5-6. Genitalia of caddisflies. 5, *Oxyethira sodalis*: genital capsule, lateral aspect. 6, *Limnephilus cerus*: A, lateral aspect of capsule; B, lateral arm of aedeagus, lateral aspect.

A PRELIMINARY REPORT ON ACARICIDES TESTED FOR PROTECTION AGAINST THE TICK *DERMACENTOR ANDERSONI* STILES ON CATTLE¹

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Economic considerations, which necessarily play an important role in the acceptance and use of any recommended insecticide, are particularly critical factors in the schedule of ranchers, whose products do not give them as high a return on their investments of property, care, and, notably,

labour as do those of other agriculturists. In view of the nature of range practices in the British Columbia interior, a spray, if it is to be accepted by the ranchers, should be such that it might be applied only once: when the cattle are concentrated near spray chutes before being dispersed over the spring and summer grazing grounds. To advocate a compound of low residual properties for use against ticks will necessitate the rounding up of

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